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Before the
FEDERAL COMMU[redacted]IONS COMMISSION
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Federal Communications Commission
Office of the Secretary

In re	)	Gen Docket No. 90-314
	)	ET Docket No. 92-100
Amendment of the Commission's	)	
Rules to Establish New Personal	)	
Communications Services	)	
	)	
To: The Commission	)	

COMMENTS ON NOTICE OF PROPOSED RULEMAKING

Freeman Engineering Associates, Inc. ("Freeman"), pursuant to Rule Section 1.415, submits its comments on the Commission's Notice of Proposed Rule Making and Tentative Decision, FCC 92-333 (August 14, 1992) ("NPRM") concerning the establishment of new Personal Communications Services, and shows the following.

1. On August 14, 1992, the Commission released its landmark NPRM, which proposes to establish rules to govern the new Personal Communications Service. Freeman generally supports the Commission's PCS rules, but will address these comments specifically to the proposals relating to the allocation for narrowband PCS services in the 900 MHz range for advanced one and two-way messaging, and briefly to the wideband two-way PCS.

I. Channelization Plans.

2. In the NPRM, the Commission proposed to allocate three megahertz of spectrum for narrowband PCS services: 901-02, 930-31 and 940-41 MHz, these frequencies are currently reserved for advanced paging and general mobile services.[1]

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[1]NPRM at para. 49.

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3. With respect to narrowband PCS proposals, the Commission has advanced several alternative possibilities for the allocation of those 900 MHz frequencies. The Commission's tentative proposal is to pair blocks of spectrum from the 901-02 MHz and 940-41 MHz bands, and to provide for unpaired use of the 930-31 MHz band. NPRM at para. 50. Moreover, the Commission proposes to divide the allocated spectrum into 50 kHz individual channels and to allow aggregation of channels in block through aftermarket sales or through competitive bidding. NPRM at 51 & n.36. As alternatives, the Commission has proposed the possibility of dividing these 900 MHz frequencies into 250 kHz, 500 kHz or 1 MHz channel blocks so as to achieve benefits of increased flexibility and reduced cost.

4. Freeman has a direct interest in the Commission's proposed establishment of narrowband PCS services, especially as they may facilitate the establishment of enhanced/advanced paging services. Freeman has discerned the need for expeditious implementation of enhanced paging services which will allow the integration of multiple modes of operation on a single paging channel. With such advanced paging service, tone plus voice, tone only, digital readout, and alpha-numeric services can all be offered concurrently, and integrated with a variety of enhanced paging services, including electronic mail ("E-Mail"), acknowledgment paging, and data services. Indeed, in its application for a pioneer's preference, filed June 1, 1992 in Docket ET 92-100, See PP-79, and in companion comments filed this day relating to the tentative denial of that pioneer's preference request,[2] Freeman proposed that the Commission allocate

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[2]See comments and Supplemental Information of Freeman Engineering Associates, Inc. (November 9, 1992).

a series of 150 kHz base to pager channels and 56 kHz[3] pager to base response channels which would allow carriers to implement advanced paging services, employing enhanced modulation techniques, such as compressed digital transmission. Freeman demonstrated in those filings that such a configuration would allow carriers the flexibility to adapt their services to meet the particular demands of their customer bases for advanced paging services, including both one and two way response techniques. In so allocating the available spectrum, Freeman believes the Commission would best provide for the introduction of advanced and enhanced paging service while maximizing the flexibility of carriers to respond to changing consumer needs and demand. Moreover, Freeman showed that its proposal for 150 kHz channels and 50 kHz response channels would have the advantage of enhancing the efficient use of scarce spectral resources as well.[4]

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[3]Freeman's technical research indicates that 56 kHz pager to base response channels would provide for the most efficient operation of its proposed system. However, it appears the Commission is inclined to allocate spectrum on the basis of 50 kHz blocks. Freeman's research discloses that although there would be some modest loss of efficiency utilizing 50 kHz response channels as opposed to 56 kHz, the benefits of its proposal would not be substantially degraded by use of the slightly smaller response channel bandwidth. Accordingly, for the purpose of these comments, Freeman will assume that the response bandwidth the Commission will allocate will be in 50 kHz blocks.

[4]Among other advantages of Freeman's proposal over existing paging operations, is greatly increased capacity in all paging modes, but especially in voice paging -- now generally discouraged in the industry because of capacity constraints -- a variety of data to non-traditional paging receivers such as printers, facsimile machines and computers.

In addition, the proposal for response channels would allow for message and error control, short responses to pages and automatic acknowledgment of a paging message. See Comments and Supplemental Information of Freeman Engineering Associates, Inc. (November 9, 1992) at Exhibit A.

5. Freeman perceives the Commission's tact in the NPRM is not to impede the development of narrowband PCS service with unnecessary restrictions, but rather to allow for the rapid and flexible development of the service through the 900 MHz frequency allocations proposed. To that end, Freemen believes it would be a mistake for the Commission to allocate the 900 MHz PCS spectrum solely in 50 kHz channels. Even with the provision for paired channels to provide for two way enhanced paging services, the use of 50 kHz channels for the base to pager channels impede the development of certain enhanced services which either require more than 50 kHz channels to function at all, or which will function less efficiently employing such narrow bandwidth channels.

6. Should the Commission choose to allocate only 50 kHz channels, then aside from the response channel (which is significant), the service would be little more than current technology running at a slightly higher speed. However, if for example 150 kHz channels are allocated, more futuristic and advanced modulation can be employed to serve a greater number of subscribers possibly bring true consumer paging as well as wide availability of voice and high speed data delivery to the marketplace.

7. Freeman believes strongly that the Commission's role should be to provide a level playing field where competing proposals for both wideband and narrowband PCS can be sorted out in the marketplace. The allocation of set 50 kHz channels in the narrowband PCS service would limit the ability of the marketplace to let different applications of PCS technology succeed or fail on their merits because such an allocation scheme is too inflexible for a developing service.[5]

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[5]For example, although Freeman agrees with the Commission's proposal to allocate spectrum for both base to paging and paging to base channels, a rigid

8. To build flexibility into the service, Freeman suggests the Commission allocate at least four 150 kHz channels for PCS type services, like its own, which require a somewhat larger amount of frequency to operate efficiently. Freeman suggests that at least two of these wider channels be allocated for regional use, with perhaps two reserved for nationwide use. By having a combination of smaller 50 kHz and larger 150 kHz channels the Commission will go a long way toward building flexibility into narrowband PCS which will allow pioneering and innovation, without unduly restricting the number of competing service providers.

9. As an alternative, although Freeman strongly believes that the assignment of 150 kHz channels and 50 kHz pager to base response channels, as it suggested in its pioneer's preference filings[6] and above, would be most conducive to the efficient development of PCS, should the Commission not yet

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pairing of channels does not consider the likelihood that the amount of information being transmitted on the base to pager channel is likely to be considerably greater in an enhanced PCS type paging system, than the information going in the other direction, from the pagers to the base station. In all likelihood, the message being sent from the pager to the base will be confined to a simple automatic acknowledgment or one of several pre-programmed responses. Thus, the need for larger bandwidth on the base to pager channel than the pager to base channel. Moreover, while the base station must communicate with a large number of pagers in its system, thus needs the larger bandwidth to increase capacity and overall spectral efficiency, the response back from the single pager to the base does not require a great deal of bandwidth, although it might well require multiple receive stations scattered over the base station's service area to ensure system receipt of the pager response signal because of the lower power of the response unit. The additional receivers allow for more throughput on the reverse channel due to geographic reuse. Accordingly, while the overall concept of paired channels in the 901-02 and 940-01 MHz bands and unpaired channels in the 930-931 MHz bands is not objectionable as a starting concept. A frequency plan with asymmetrical channels and flexible pairing of channels would yield the maximum flexibility.

[6]See Comments and Supplementary Information of Freeman Engineering Association, Inc. (November 9, 1992).

be convinced of the efficacy of Freeman's plan, then Freeman believes the wisest choice the Commission could make would be to adopt a completely flexible channelization scheme, which would seek to facilitate the highest and best use of available spectrum. The Commission could most effectively do this be requiring narrowband PCS applicants who believe they have a need for greater than 50 kHz of spectrum to propose in their applications the amount of spectrum their service offering would require and to justify any allocation to them with a sufficient technical showing of the need for their requested spectrum. Should such applicants fail to justify their proposals sufficiently, their applications would be dismissed as defective or, if considered necessary from a legal standpoint, be designated for hearing on an appropriate basic qualifications issue potentially leading to denial.[7]

10. On the related question of the Commission's proposed alternative channelization plans of 250 and 500 kHz and 1 MHz, adoption of those channel plans, while providing sufficient spectrum to eliminate concerns Freeman has concerning inadequate channel bandwidth, are likely to limit the number of competitive and innovative service offerings, while still suffering from inflexibility, without realizing a sufficient public interest benefit. Accordingly, Freeman maintains its position that the Commission should adopt a flexible scheme for allocating frequency for narrowband PCS services, including specific allocations of 150 kHz channels so that parties with need for larger amounts of spectrum

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[7]A a related concern, the Commission should allow the free transferability of spectrum, whether or to constructed, to facilitate its highest and best use of the spectrum and to facilitate the rapid construction of systems by willing licensees. Although this may have the marginally negative result of encouraging speculation, Freeman sees the rapid and efficient development of service as the paramount goal in implementing PCS, and further believes that no action--short of implementing comparative hearings -- as significantly reducing speculative applications.

may have that spectrum available, while parties without such need may receive only the 50 kHz of spectrum they need.[8]

11. Should the Commission only allocate 50 kHz channels and rely on after market aggregation, then timely deployment of innovative services may be thwarted. After market aggregation of channels is difficult at best. If for example Freeman obtained as 50 kHz grant and two others received 50 kHz contiguous grants, but wished to construct systems and not sell, then the wideband system could not be built. In Freeman's proposal the channel bandwidth is 150 kHz, not 3 individual 50 kHz channels. Thus the 3 channels must be adjacent to be aggregated into one single 150 kHz channel. As seen in Freeman's comments and supplemental information, greater efficiently is obtained by their innovative wideband modulation with respect to capacity. The whole is greater sum of the parts if the parts are individual 50 kHz channels.[9]

II. <u>Interconnection</u>.

12. Freeman believes the Commission should adopt the principals of interconnection that are reasonable and cost based. If the requested interconnection is reasonable the LEC should supply it rather than hold back for competitive reasons, as it has in the past. Recently in cellular interconnection cases in Louisiana, the LEC proposed rates that were not cost based, and did not supply the type interconnection requested by the cellular carriers. They had done no cost studies to support the rates, rather they said they had chosen the rates on market forces. After the Louisiana Commission staff report

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[8]It should be noted that the Commission should place specific time limits on construction and should parties not construct on time, the construction permits should be forfeited and the spectrum relotteried. Freeman believes this policy will discourage insincere, speculative, or under financed applicants.

[9] Freeman's reply to opposition, June 29, 1992 Par. 7.

recommended rates that paralleled the cellular intervenor's cost studies (made from the LEC's own data), a negotiated settlement that did not recognize the principal of cost based rates but that closely approximate the level was reached. Type 2B interconnection was also agreed to. Before the settlement the LEC refused type 2B and would not put it in their tariff despite the fact that a more efficient network could be built by the joint efforts of cellular and LEC carriers, which would translate to overall lower operating cost and better rates and services to the public. Freeman ask that the Commission take official notice of the Louisiana Interconnection case (Docket U-18976) and urges that in addition to the principals of no less favorable interconnection and reasonable type interconnection[10] that it adopt a policy of requiring cost based rates and preempt the states to this degree. In the alternative it is urged that LEC's be barred from providing PCS services in their own landline areas, so that discrimination against the non-LEC provider will not take place.

III. Other issues.

13. With respect to the questions of local, regional or nationwide licensing of narrowband PCS service, traditionally, paging type services have been a local concern. Technological advancements, including extensive business and vacation travel, and the increasing usage of satellite technology, however, have sparked demand for nationwide communications services. Moreover, the ubiquitous nature of PCS service is likely to spur even greater demand for wide-area and nationwide service. The nature of PCS is such that it should be reserved for regional and nationwide use. Local licensing is likely to be wasteful from a spectral efficiency standpoint. Accordingly, Freeman suggests that the licensing of narrowband PCS systems be done by establishing

[10] NPRM at para. 101.

a combination of regional and nationwide systems, with the majority of spectrum allocated to a regional use. As to the basis for what constitutes a region, Freeman believes that the regional map being filed by Telocator today should be adopted.[11] Should the Commission also allocate local channels, then the MSA/RSA system which has worked well for the licensing of the cellular service should be adopted for local PCS use as well.[12] Allowing prospective PCS licensees to choose and define their own service areas -- at least in the initial stage of licensing -- is likely to result in an excessive number of "daisy chained" conflicting proposals. See Cellular Communications Systems, 89 F.C.C. 2d 58, 86-87 for the method of choosing PCS licensees, Freeman(1982) (order on reconsideration).

14. As for the method of choosing PCS licensees, Freeman believes the Commission is giving short shrift to pioneer's preference applicants. As Freeman has made clear in its pending petition for reconsideration of the denial of its pioneer's preference application for the provision of two-way data and advanced paging services in the 930-31 MHz band, Freeman's application contained all the required showings to obtain a preference. Yet, the only basis for the Commission's tentative denial of that request was that Freeman did not explain the technical basis for its proposal with greater specificity. Not only was that an erroneous conclusion as a matter of law and fact,[13] but it also applied to Freeman (and others) a standard not previously articulated, a clear violation of the requirements of due process of law.[14] Freeman believes that the

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[11] Comments of Telocator on 900 Mhz Personal Communications Service, Nov 9, 1992.

[12] MSA's tend to be cohesive areas of common interest, and would thus appear to be logical licensing areas for regional narrowband PCS licenses.

[13] See PP-79, Petition for Reconsideration (October 5, 1992).

[14] See Bamford v. FCC, 535 F.2d 78, 82 (D.C. Cir.), cert. denied, 429 U.S. 895 (1976) ("elemental fairness requires clarity of standards sufficient to apprise an applicant of what is

Commission should recognize the efforts by many and maximize the grants of Pioneer's Preferences so that new and innovative techniques will come forth. To grant only one AMS application will have a chilling effect on the industry and ultimately the service to the public.

15. Aside from licenses awarded as a result of pioneer's preferences, Freeman suggests that PCS licenses be awarded by lottery. In the event the Commission allocates specific channels of 150 kHz and 50 kHz, then the selection process would be simple. Parties who wish to file for those channels would do so with separate applications for each channel requested; lotteries would be held and the winners -- assuming their applications were grantable -- would be granted.

16. Should the Commission elect to adopt Freeman's alternative proposal for fully flexible allocations, lotteries would be handled in the following manner. Applicants for a given region should be ranked by lottery and their applications evaluated in sequence to determine that sufficient spectrum is available to accommodate their proposals as technically justified in their applications. If sufficient spectrum is available to accommodate a first (and so on) ranked proposal, it should be granted, with the Commission and not the applicant specifying the specific frequencies which will be granted.[15] If sufficient spectrum is not available for the next ranked applicant, it should have the option to accept whatever spectrum may be left. If it does not accept the spectrum offered, then the spectrum should be offered to the next ranked applicant; and so on.

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expected"). See also Colby-Bates-Bowdoin Ed. Tel. Corp. v. FCC, 534 F.2d 11, 13-15 (D.C. Cir. 1976); Hatch v. FERC, 654 F. 2d 825, 835 (D.C. Cir. 1981); Boston Edison Co. v. FPC, 557 F.2d 845, 847 (D.C. Cir. 1977).

[15] This is to insure the most efficient allocation of spectrum among the various modes of PCS service which will be authorized.

17. With respect to eligibility, Freeman does not believe that either existing cellular or existing RCC operators should be prohibited from applying for PCS frequencies, either wideband or narrowband.

18. Freeman generally agrees with the Commission's proposed technical standards for the 900 MHz narrowband PCS frequencies, with the caveat that a liberal waiver standard should be applied to allow flexibility in service offerings as long as it is shown that harmful interference will not result from any waiver.

19. Freeman believes that the 901-902 should be reserved for low power (7 watts) talkable only and not be assigned to base stations with high power in order to preserve the interference free operation between systems.

20. The Rules adopted by the Commission should allow licensees maximum technical flexibility so that systems can be configured to provide the advanced services that subscribers require. To this end, the regulations adopted should: a) allow the individual licensees to select the modulation techniques employed by their systems; b) allow industry working groups to develop the signaling protocols to be used.

IV. Wideband PCS.

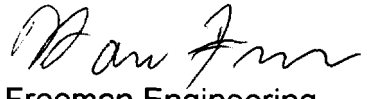
21. With respect to PCS systems to operate on the 2 GHz band channels, the Rules adopted should not restrict the type of modulation techniques employed. Packet-type transmission should be allowed so that PCS systems are fully capable of accommodating telecommunications devices for the deaf ("TDD"). It is important that the Rules adopted allow sufficient technical flexibility so that PCS systems can accommodate the unique needs of the deaf and hearing impaired. There are approximately 26 million hearing impaired, with about 4 million requiring TDD devices in the US. Another 8 million speech impaired persons can benefit from the availability of technology which allows

wireless communications priced compatibility with more traditional wireless services. In this regard, packet-type transmission eliminates the long holding times typically required for TDD-type transmissions and, therefore, promotes greater efficiently in the use of the radio spectrum. This transmission mode can be interleaved on the PCS channel with regular calls, if not prohibited by the rules, or ridig standards.

22. Freeman also urges the Commission not to restrict the use of PCS and allow such modes as dispatch, so that short communications can take place, as in intercom exchanges.

23. Finally, Freeman believes that many issues on the broadband PCS may take longer to resolve than those on narrowband, and believes the Commission should put them on two tracks so that one will not hold the other up.

Respectfully Submitted,



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Dated: November 9, 1992

CERTIFICATE OF SERVICE

I hereby certify that I am an attorney with the law offices of Blooston, Mordkofsky, Jackson & Dickens, and that on this 9th day of November, 1992, I caused to be mailed by first class United States mail, postage prepaid, a copy of the foregoing "**Comments on Notice of Proposed Rulemaking**" to the following:

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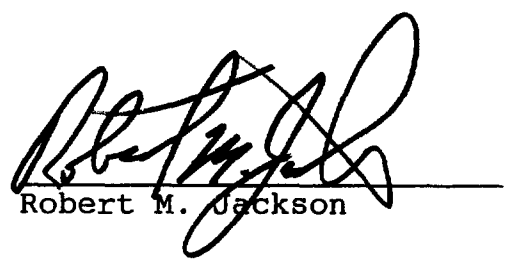

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